3.7 NOISE

3.7.1 Introduction

This section presents a brief discussion of the generation and characteristics of sound and how sound is measured, followed by a characterization of the existing ambient sound levels in the project area and identification of sensitive receptors. Applicable regulations of the local community are also discussed.

The operation of the marine terminal produces both mobile and stationary source noise emissions. Mobile source noise emissions are associated with the operation of ships and tugs/barges which call on the terminal. Stationary source noise is associated with terminal operations at the wharf and include the noise associated with ships while hoteling, the various pumps, and operation of the vapor recovery system. The impacts analysis compares these operations to the local regulations to determine whether continued operation of the terminal would exceed established noise criteria.

3.7.2 Existing Conditions

3.7.2.1 Characteristics of Sound

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary by over one trillion times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called “A-weighting” written as dBA. Sound is recorded among several factors, the equivalent continuous noise level (L_{eq}), the minimum and maximum values (L_{min} and L_{max}), and four percentile noise levels (L_{01}, L_{10}, L_{50}, and L_{90}). Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or the day/night average noise level (L_{dn}). The noise level experienced at a receptor depends on the distance between the source and the receptor, presence or absence of noise barriers and other shielding features, and the amount of noise attenuation (lessening) provided by the intervening terrain.

3.7.2.2 Noise Characteristics of the Project Area

As shown in Figure 1.1-2 in Section 1.1, the project area is located in the San Francisco Bay east of Interstate 680 (Benicia-Martinez Bridge) in an industrial area of the city of Martinez. The Shore Marine terminal site is designated by the city of Martinez General Plan as Industrial (City of Martinez 2002) and by the BCDC San Francisco Bay Plan as Water-Related Industry (BCDC 2002). Other industrial uses and open space areas dominate the surrounding area adjacent to the marine terminal. North of the marine terminal is the Carquinez Strait and Suisun Bay. Land uses to the south include open space marshlands (Peyton Marsh and BCDC trail), and industrial areas (tank storage facilities, Waterfront Road, and Union Pacific Railroad). Land uses to the east also include open space (Carquinez Strait and Point Edith Wildlife Area) and industrial areas (Copart Auto Salvage Yard, Hanson Marine Facility, and Tesoro Petroleum oil refinery). Land uses immediately to the west include open space marshlands (Peyton Marsh). Further west is Interstate 680 and the Benicia-Martinez Bridge. A mix of residential, commercial, recreational, open space, and industrial uses are located west of Interstate 680. Refer to Section 3.5 for a more detailed discussion on land use issues.

The primary noise source in the project area is traffic noise from Interstate 680. Secondary noise sources include commercial and industrial activities (e.g., auto-salvage yard, trains, and truck deliveries) and residential noise sources (e.g., passenger vehicles along Waterfront Road). Noise measurements were recorded at three locations in the vicinity of the Proposed Project and are shown on Figure 3.7-1. Noise levels listed in Table 3.7-1, which include measurements taken in the vicinity of the Shore terminal (No.1, 2, and 3) and measurements previously recorded at the Unocal Marine Terminal (*Unocal Marine Terminal EIR*, 3/1/1994) (No. 4 and 5), provide a representative sample of ambient noise conditions nearby and at the Shore terminal. Noise conditions are described in terms of: Equivalent Sound Level (L_{eq}), the average level of sound determined over a specific period of time (in this case 15 or 16 minutes); the maximum sound level (L_{max}) reached during a sampling period; and the minimum sound level (L_{min}) reached during a sampling period. As described in Table 3.7-1, measured average ambient noise levels in the vicinity of the Shore terminal ranged between 51 and 58 dBA L_{eq}, whereas noise levels within 50 to 200 feet of a thermal oxidizer in operation ranged between 61 and 74 dBA L_{eq}.

3.7.2.3 Sensitive Receptors

The nearest sensitive receptors are the residential areas located south of Pacheco Boulevard in the city of Martinez, southwest of the wharf approximately 2 miles from the Shore terminal operations. Refer to Figure 3.5-1 for zoning in the vicinity of the Shore terminal. The Bay Conservation and Development Commission (BCDC) trail, which provides access to the open areas to the south and west of the terminal, would also be considered a sensitive receptor. As mentioned in Section 3.5, the trail receives only approximately 5 users a week, and the average ambient noise level would be approximately 51 dBA L_{eq} (see monitoring location No. 3 in Table 3.7-1).

Table 3.7-1
Ambient Noise Levels Representative of the Project Area

Location #	Location Description	Survey Period	L_{eq}	L_{max}	L_{min}	Noted Sources
Shore Terminal						
1	Shore Marine Terminal: Waterbird Regional Preserve, off Waterbird Road, just south of intersection with Waterfront Road.	1:45 p.m. to 2:00 p.m.	58	67	54	Background noise dominated by Highway 680, located 0.5 mile to the west. Loudest noise events originated from large truck traffic on Waterbird Road.
2	Shore Marine Terminal: 2081 Waterfront Road, outside of entrance gate.	2:10 p.m. to 2:25 p.m.	56	70	46	Loudest noise events came from trucks using adjacent auto salvage yard.
3	Shore Marine Terminal: Open space area, south of Shore's marine terminal but north of Shore's storage facilities. 100 yards west of road that follows pipeline from the terminal to the tanks.	2:30 p.m. to 2:45 p.m.	51	63	43	Loudest noise events came from planes. Background noise dominated by Interstate 680.
4	Unocal Marine Terminal: On pier during loading of gasoline onto the Coast Range. The Sierra Madre was also at berth, but not undergoing loading or unloading activities. Taken 50 feet south of the thermal oxidizer (TO).	11:02 a.m. to 11:18 a.m.	74.3	77.5	73.5	Noise from TO due to blowers. Minor crane noise caused by a hose moving. Two cars passed by at slow speed.
5	Unocal Marine Terminal: On pier during loading of gasoline onto the Coast Range. The Sierra Madre was also at berth, but not undergoing loading or unloading activities. Taken 200 feet south of the TO.	11:22 a.m. to 11:37 a.m.	61.1	62.5	60.5	Noise from TO due to blowers. Minor crane noise caused by a hose moving. One aircraft flew overhead.

Notes: All measurements are in dBA; Measurements at the Shore terminal were taken on December 11, 2002. Measurements at the Unocal Marine Terminal were taken during field monitoring, which occurred on August 21, September 15, and October 19, 1992.

L_{eq} = Equivalent Sound Level, a measurement (in this case 15-16 minutes) that accounts for the moment-to-moment fluctuations due to all sound sources during the measurement period, combined.

L_{max} = The maximum sound level reached during a sampling period

L_{min} = The minimum sound level reached during a sampling period

1 3.7-1 – Noise Measurement Locations

3.7.2.4 Applicable Laws, Ordinances, Regulations, and Standards (LORS)

As a general matter, federal and state agencies regulate mobile noise sources, and local agencies regulate stationary noise sources and activities. Federal and state agencies regulate noise from mobile sources by establishing and enforcing noise standards on vehicle manufacturers. Local agencies regulate noise through three principal means: enforcement of local noise ordinances; implementation of noise-related policies contained in the local general plan, such as noise/land use compatibility guidelines; and enforcement of noise-related conditions on permit approvals.

Federal Regulations/Standards

The U.S. Environmental Protection Agency (EPA) has developed guidelines on recommended maximum noise levels to protect public health and welfare (EPA 1974). The EPA does not enforce these regulations, but rather offers them as a planning tool for state and local agencies. Table 3.7-2 provides examples of protective noise levels recommended by the EPA.

Table 3.7-2
EPA Designated Noise Safety Levels

Effect	Level	Area
Hearing Loss	L_{eq} (24)<70 dB	All areas
Outdoor Activity Interference and Annoyance	L_{dn} <55 dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	L_{eq} (24)<55 dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor Activity Interference and Annoyance	L_{dn} <45 dB	Indoor residential areas
	L_{eq} (24)<45 dB	Other indoor areas with human activities such as schools, etc.

Source: EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974.
Notes: L_{eq} (24) = Represents the sound energy averaged over a 24-hour period.
L_{dn} = Represents the L_{eq} with a 10 dB nighttime weighting.

The Federal Office of Safety and Health Administration (OSHA) regulates exposure to occupational noise (29 CFR Section 1910.95) by limiting the interval of time a worker can be exposed to certain noise levels. These regulations list permissible noise exposure levels as a function of the amount of time to which the worker is exposed. For example, a worker should not be exposed to average sound levels of 90 dBA for over 8 hours. When noise exposure exceeds this, employers should reduce exposure conditions with engineering or administrative methods. If exposure time cannot be reduced, protective equipment is required to reduce noise levels to permissible levels.

State Laws and Regulations

The California Government Code § 65302(f) encourages each local government entity to conduct noise studies and implement a noise element as part of their General Plan. In addition, the California Office of Planning and Research published guidelines (OPR 1990) for evaluating the compatibility of various land uses as a function of community noise exposure, and these are listed in Table 3.7-3.

The California Office of Safety and Health Administration (Cal/OSHA) also regulates employee noise exposure, as mandated by CCR Title 8, Group 15, Article 105 §§ 5095-5100. Cal/OSHA stipulates the same requirements as Federal OSHA (above). Additionally, a Hearing Conservation Program must be instituted when employees are exposed to noise levels of an 8-hour time weighted average at or greater than 85 dBA.

Table 3.7-3
Land Use Compatibility for Community Noise Environment

Land Use Category	Community Noise Exposure – L_{dn} or CNEL (db)													
	50		55		60		65		70		75		80	
Residential – Low Density Single Family, Duplex, Mobile Home														
Residential – Multi-Family														
Transient Lodging – Motel, Hotel														
Schools, Libraries, Churches, Hospitals, Nursing Homes														
Auditorium, Concert Hall, Amphitheaters														
Sports Arena, Outdoor Spectator Sports														
Playgrounds, Neighborhood Parks														
Golf Courses, Riding Stables, Water Recreation, Cemeteries														
Office Buildings, Business Commercial and Professional														
Industrial, Manufacturing, Utilities, Agriculture														

	Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.
	Normally Unacceptable: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	Clearly Unacceptable: New construction or development generally should not be undertaken.

Source: State of California General Plan Guidelines, Office of Planning and Research, June 1990.

Regional and Local Regulations and Standards

Noise regulations and standards for Contra Costa County, the city of Martinez, and Solano County would apply to the Proposed Project, and are detailed in Table 3.7-4 below. Contra Costa County follows the State of California land use compatibility guidelines (shown in Table 3.7-3) in their general plan (Contra Costa County 1996). The city of Martinez adopted Ordinance No. 1288 C.S. Chapter 8.34 (Noise Control) to the Martinez Municipal Code on September 5, 2001 (City of Martinez 2001) to implement the goals of the Noise Element of the General Plan. Acceptable standards are outlined in § 8.34.020. Solano County noise policies are described in the General Plan Health and Safety Element (Solano County 1977, pp. 17-23).

Table 3.7-4
Summary of Regional and Local Regulations and Standards

Source	Level	Area
Contra Costa County General Plan Noise Element	CNEL = 60 dBA	Low-density residential areas.
	CNEL = 75 dBA	Industrial land uses.
City of Martinez Noise Ordinances	L_{dn} = 45 dB	Interior noise levels (35 dBA between 10 p.m. and 7 a.m. and 45 dBA between 7 a.m. and 10 p.m.).
	L_{dn} = 60 dB	Exterior noise levels (50 dBA between 10 p.m. and 7 a.m. and 60 dBA between 7 a.m. and 10 p.m.).
Solano County General Plan Health and Safety Element	CNEL = 45 to 70 dBA	Commercial land uses (wholesale, industrial, manufacturing, utilities, etc.).

3.7.3 Impacts Analysis and Mitigation Measures

Impact Significance Criteria

Impacts are considered adverse and significant if the project noise levels exceed the local noise ordinances, or any applicable noise regulations promulgated on the state or federal level. For this analysis, impacts from noise would be considered significant if:

- Applicable local standards, noise elements, or ordinances would be exceeded in noise level, timing, or duration. These include:

  The *Contra Costa County General Plan Noise Element* states that the maximum CNEL for Industrial land uses is 75 dBA.

  The *city of Martinez* noise ordinance's standard for industrial areas limits noise offsite to 70 dBA.

  The *Solano County General Plan Health and Safety Element* states that commercial land uses have an acceptable noise range of 45 to 70 dBA CNEL.

- The project would increase the ambient noise level above ordinance-specified limits by more than 5 dBA (substantial increase), or by 3 dBA in areas already exceeding ordinance-specified limits.

3.7.3.1 Shore Marine Terminal Routine Operations and Potential for Accident Conditions

Impact N-1: Consistency with Local Standards, Noise Elements and Ordinances

Because the marine terminal already exists, it is considered part of the ambient noise environment. It is located in an industrial area with no nearby sensitive receptors. Over the lease period, no sensitive receptors are to be constructed proximate to the terminal. No noise impacts from the Proposed Project are expected (Class III).

Shore proposes to continue operation of the marine terminal with no expansion or change in use of the existing facility for the duration of the proposed 20-year lease. Thus, the baseline conditions are defined as existing Shore operations. Noise is generated primarily from traffic, commercial, and industrial activities. As described in Table 3.7-1, existing average ambient noise levels in the vicinity (offsite) of the Shore terminal ranged between 51 and 58 dBA L_{eq}.

The *Contra Costa County General Plan Noise Element* states that the normally acceptable range for industrial land uses is 50 to 75 dBA CNEL. The CNEL and the measured daytime L_{eq} are not directly comparable. However, the highest measurement of 58 dBA L_{eq} at a nearby offsite location would indicate, using conservative assumptions, that this standard would not be violated. Therefore, no impact due to the Proposed Project is expected.

The *city of Martinez Noise Ordinances* provide acceptable standards for noise levels. New commercial or industrial development located within 500 feet of a residential development must be designed and operated within the acceptable standards (City of Martinez 2002). Because the marine terminal already exists, it is considered part of the ambient noise environment and not a new facility. The marine terminal is located in an industrial area, and other industrial uses and open space areas dominate the surrounding area. There are no residences located within 7,500 feet of the marine terminal nor would any new nearby developments be expected during the lease period. Additionally, Interstate 680 (Benicia-Martinez Bridge) separates the marine terminal from the residential areas within the city of Martinez. Therefore, no impact due to the Proposed Project is expected.

The *Solano County General Plan Health and Safety Element* states that commercial land uses have an acceptable noise range of 45 to 70 dBA CNEL. The CNEL and the measured daytime L_{eq} are not directly comparable. However, the highest measurement of 58 dBA L_{eq} at a nearby offsite location would indicate, using conservative assumptions, that this standard would not be violated. Therefore, no impact due to the Proposed Project is expected.

N-1**:** No mitigation is required.

Impact N-2: Operations Over 20-Year Lease Period

No expansion of marine terminal operations are expected to occur over the 20-year lease period. Vessel activities are expected to remain the same as that of the Proposed Project. Impacts are less than significant (Class III).

Shore proposes to continue operation of the marine terminal with no expansion or change in use of the existing facility for the duration of the proposed 20-year lease. Thus, the baseline conditions are defined as existing Shore operations. As described in Table 3.7-1, existing average ambient noise levels in the vicinity (offsite) of the Shore terminal range between 51 and 58 dBA L_{eq}. Ambient noise levels would not be increased by the Proposed Project. Therefore, impacts associated with long-term operations are considered less than significant (Class III).

N-2: No mitigation is required.

3.7.4 Alternatives

3.7.4.1 No Project Alternative

Impact N-3: Effects on Noise with No New Shore Terminals Lease

The alternative would have no effect on noise at the Shore facility. Increases in noise would be associated to the other marine terminals who would have increased vessels activities and impacts could potentially be significant. Shore has no responsibility for those facilities (Class III).

The No Project Alternative would require Shore to cease operation of the marine terminal, which currently serves nearby refineries between Rodeo and Martinez. Without the Shore terminal, other area marine terminals would be required to increase inbound and outbound shipments to meet regional refining demands. Increasing the number of shipments at the other area marine terminals could cause an incremental increase in noise. The noise impact to those marine terminals located in industrial areas would not be considered significant. However, if the alternate marine terminal(s) are located near sensitive receptors (e.g., residential or recreational areas) and the increase in noise exceeds a local standard, noise element, or noise ordinance, the impact could potentially be significant. Increased activity at these terminals would require a separate CEQA review and for any significant adverse impacts identified, mitigation measures applicable to those existing terminals would need to be developed.

Decommissioning of the wharf would be subject to a separate CEQA review. Construction activities associated with this activity would be expected to result in a temporary increase in noise levels; however, these would not be expected to exceed the

local regulations and are considered less than significant (Class III). Due to the distance to sensitive receptors, no receptors would be affected by deconstruction activities and any impacts would be less than significant (Class III).

N-3: No mitigation is required.

3.7.4.2 Increased Use of Existing Pipelines for Continued Operation of Upland Facility Alternative

Impact N-4: Continued Shore Upland Operations via Existing Pipelines

Termination of Shore's lease and the continued use of existing pipelines would not result in noise impacts since the pipelines already exist. Any increase in Shore's upland tankage would not result in an increase in noise (Class III).

The Shore upland facility currently receives and distributes petroleum products by marine vessels and land-based pipelines. For this alternative, it is assumed that the Shore upland facility would continue to function utilizing only land-based pipelines. Connections for moving oil to and from the Shore upland facility to the Shell Martinez, Valero Benicia, and Tesoro Amorco wharves are already in place. Therefore, no construction would be required to utilize these pipelines. However, these wharves would need to increase shipping operations. Increasing the number of shipments at these wharves would cause an incremental increase in noise. The Equilon Enterprises LLC Martinez, Valero Benicia, and Tesoro Amorco wharves are located in industrial areas. Therefore, the noise impacts to these marine terminals are considered to be less than significant (Class III).

An increase in activity could occur at the Shore upland facility, associated with increasing the capacities of currently underutilized pipelines, assuming agreements/ connections can be made. An increase in tankage at the upland facility would not contribute to any increase in noise from the facility and impacts are less than significant (Class III).

N-4: No mitigation is required.

3.7.4.3 Modification of Existing Pipelines for Continued Operation of Upland Facility Alternative

Impact N-5: **Continued Shore Upland Operations Via Modifications To Existing Pipelines**

Termination of Shore's lease and the use of modified pipelines may result in temporary construction significant adverse (Class II) impacts. Operations would not increase noise.

Shore has connections to the inactive PG&E fuel oil line that could transfer crude oil to and from Shore with possible connections to Shore Selby, ConocoPhillips Rodeo, and Chevron Richmond. To use this line would require examination of pipeline integrity, construction to reconnect the segment in the city of Martinez, and construction to provide connections to the marine terminals at Shore Selby, ConocoPhillips Rodeo, and Chevron Richmond. In comparison to the Proposed Project, the noise impacts for this alternative would be greater due to both construction and increased shipments at local marine terminals. Noise impacts from construction have the potential to result in a significant adverse impact (Class II).

Mitigation Measures for N-5:

N-5a: The construction contractor shall properly maintain and tune engines of all construction equipment to minimize noise emissions.

N-5b: The construction contractor shall maintain properly functioning mufflers on all internal combustion and vehicle engines used in construction to reduce noise to the maximum feasible extent.

N-5c: During construction, the contractor shall ensure that all noise generated from construction-related equipment and activity complies with applicable Contra Costa County and city of Martinez noise standards and thresholds where technically feasible. Noise standards and thresholds of Contra Costa County and city of Martinez shall be included in the construction contractor's contract with Shore. Compliance during planning and construction is to be monitored by the city/county agency that enforces the noise ordinances, by the Public Works Department, or by a CPUC-approved construction monitor.

N-5d: In the event of complaints by nearby residents, the construction contractor shall monitor noise from construction activity. Noise shall be measured at adjacent residential uses. In the event that construction noise exceeds the specified limits designed in the permit issued by the Noise Control Officer, the responsible construction activity shall cease until appropriate measures are implemented. Noise thresholds shall be included in the construction contractor's contract with the District.

Rationale for mitigation: Measures 5a and 5b help to minimize construction equipment noise. Measures 5c and 5d serve to ensure compliance with local codes and ordinances, including providing appropriate noise measures if residents complain. With these measures construction noise would be reduced to less than significant.